Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

a temperature of 264° C., it passed from the monoclinic to the triclinic modification, having a distinct system of twinning lamellæ and an inclined extinction of 2° against the cleavage lines on oP. The same feldspar was also found to undergo a like alteration when subjected to pressure, thus experimentally proving the suggestion of Van Werveke[1] that many plagioclase crystals owed their twinning striation to the pressure to which they had been subjected in rocks.

HYPERSTHENE-BASALT.—A correction should be made to the statement in the Petrographical Notes (NATURALIST, April, 1885, p. 395), that Mr. J. S. Diller was the discoverer of the new rock type hypersthene-basalt. This rock was described by Messrs. Hague and Iddings in 1883,[2] in their Note on volcanoes of Northern California, Oregon and Washington Territory, and again in 1884[3], in their Notes on the volcanic rocks of the Great basin. It is, however, here spoken of as olivine-bearing hypersthene andesite, or as hypersthene-bearing basalt. These authors regard the hypersthene and olivine as playing complementary *rôles* in the lavas, *i. e.*, one being a singulosilicate and the other the corresponding bisilicate; in case a basalt grows slightly more acid the hypersthene replaces the olivine, which therefore diminishes in quantity as the other increases. In this way hypersthene-basalt may be regarded as a connecting link between basalt and hypersthene-andesite.

BOTANY.[4]

FERTILIZATION OF THE WILD ONION (ALLIUM CERNUUM).—The wild onion grows in masses along the banks of shady streams in August. The flowers are arranged in dense umbels, which are nodding as their specific name implies. They are of a beautiful rose color, presenting an attractive appearance, when seen from a distance. There are six stamens, which arrive at maturity one after the other, the outer row developing first (Fig. 1). In this successive development they resemble the usual course in the an-

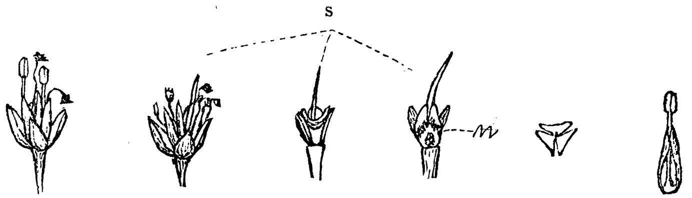


Fig. 1. Fig. 2. Fig. 3. Fig. 4.

Fig. 1. Antheriferous period. Fig. 2. Female state. Fig. 3. The three processes with nectaries (*n*) at their junction. Fig. 4. A stamen attached to an inner member of the perianth and enfolded by it.

---

[1] Neues Jahrbuch für Min., etc., 1883, II, p. 87.

[2] American Journal of Science, Sept., 1883, p. 233.

[3] Ib., June, 1884, p, 457 and p. 460.

[4] Edited by Professor CHARLES E. BESSEY, Lincoln, Nebraska.

droecium of Umbelliferæ. The style remains small, maturing after the anthers have dehisced, presenting thus a case of simple proterandry. The last stamen has shed its pollen before the stigma matures (Fig. 2). Both stamens and pistils protrude considerably from the perianth, some of the anthers being empty while others in the same flower are immature or dehiscing. The stamens composing the outer row are partly enfolded by the inner set of the perianth to which they are attached at their base (Fig. 4). This tube serves as a guide to the nectary which lies just in front of the base of the inner set of the perianth. The nectary itself is a curious device, consisting of three organs placed so as to cover the ovary, being adnate to it, and bilobed above in such a manner that the contiguous lobes approach each other and serve as a cover to the three nectary glands just beneath their place of meeting. The nectary gland is thus enclosed by these processes of the ovary and the inner row of the perianth (which enfolds these processes or lobes, one sepal to each pair of lobes). The lobes afterwards appear as six teeth cresting the maturing ovary. Cross-fertilization is necessary in these plants and the office is undertaken by various sized bees. Self-fertilization apparently is impossible.—*Aug. F. Foerste, Granville, Ohio.*

THE CONTINUITY OF PROTOPLASM IN MANY-CELLED PLANTS.—A paper recently published in *Nature*, by Dr. Schaarschmidt, contains a summary of the results of investigations as to the continuity of protoplasm in the many-celled plants. From this it appears that the first direct observations were made by Theodore Hartig, in 1854, who described the continuity of the protoplasm in sieve tubes. This case of continuity confirmed by many observers remained the only one, until the year 1878, when Bornet and Wright published papers in which the communication between adjacent cells of the Florideæ was described. In 1879 or 1880, the communication between the endosperm cells of phanerogams was observed. Since that time numerous observations have been made, all tending to show that the phenomenon is far more general than at first suspected.

It has also been shown that protoplasm occurs in intercellular spaces; and now Dr. Schaarschmidt announces the discovery of inter-lamellar protoplasm, that is of a thin layer which occupies the position of what has been long known as the " middle lamella " of the cell wall

The "general results" are given by the author, as follows: (1) " The protoplasts of all the tissues in united cells are in direct connection by means of finely attenuated protoplasmic threads.

(2) " The connective threads traverse the pit-closing membrane (which is of a sieve-plate structure), while in unpitted cells they traverse directly the cell wall. By these threads is the communication between the connective process which occupy the pit-cavity from both sides directly established.

(3) "The intercellular plasm occurs not only in the intercellular spaces of the parenchymatic tissues, but also in those of true prosenchymatic tissues.

(4) "This intercullar plasm contains, in many cases, chlorophyll granules (in Viscum).

(5) "The intercellular plasm is in direct connection with the adjacent protoplasts.

(6) "Corresponding to the middle lamella around the cells, we find a plasmatic frame; the sides of this frame end in the 'intercellular plasma. This plasmatic frame forms a veritable mantle around the protoplasts, and it is increased at each edge by an intercellular plasm portion, which latter has a pillar form.

(7) "The connective threads of the protoplasts traverse this 'middle lamellary' plasma; both are also connected.

(8) The probable origin of this intercellular plasma is this: During the cell-division, when the division was almost ended, little cytoplasmic portions become included in the young cell wall, and it is also very probable that the connective threads, in many instances, are the remainder of the 'nuclear connective threads,' and that the middle-lamellary protoplasm is the remainder of the 'cell-plate.' All these plasma portions are by the thickened cell-wall much compressed together, and therefore only visible, or distinctly visible by the swelling of the cell-wall.

(9) "The intercellular plasm can cover itself with a cell-membrane, and in this way we find at the place of the intercellular spaces veritable new cells. About these new cells, appear later new secondary or tertiary intercellular spaces.

(10) "The protoplasm of the crystal-bearing cells (crystal glands), and that of the resin-canal cells is also in communication with the adjacent cells.

"The protoplasts of the plants (composed of tissues) form a higher unity, one synplast."

WILLKOMM'S ARRANGEMENT OF THE VEGETABLE KINGDOM.—In a review of a recently published "Bilder Atlas," by M. Willkomm, in the *Botanisches Centralblatt*, the following is given as his proposed arrangement of the vegetable kingdom:

FIRST KINGDOM. SPOROPHYTA.

Division I. Thallophyta.

Class I. Mycetoideæ, containing the orders 1. *Myxomycetes* and 2. *Fungi.*

Class II. Phycoideæ, containing the orders 3. *Lichenes*, and 4. *Algæ.*

Division II. Cormophyta.

Class III. Protonemaceæ, orders 5. *Hepaticæ* and 6. *Musci.*

Class IV. Prothallionatæ, orders 7. *Equisetinæ;* 8. *Lycopodinæ;* and 9. *Filicinæ.*

SECOND KINGDOM. SPERMATOPHYTA.

Division III. Gymnospermæ.

Class V. Pseudocarpæ, orders 10. *Cycadeæ;* 11. *Taxineæ;* 12. *Coniferæ;* and 13. *Ambiguæ.*

Division IV. Angiospermæ.

Class VI. Acotyledoneæ, order 14. *Rhizantheæ.*

Class VII. Monocotyledoneæ, orders 15. *Fluviales;* 16. *Spadicifloræ;* 17. *Principes;* 18. *Glumaceæ;* 19. *Enantioblastæ;* 20. *Helobiæ;* 21. *Gynandræ;* 22. *Scitamineæ;* 23. *Ensatæ;* 24. *Artorrhizæ;* 25. *Coronariæ.*

Class VIII. Dicotyledoneæ, orders 26 to 71, in approximately the sequence followed in Bentham and Hooker's Genera Plantarum. The "orders" here are, however, groups of higher rank than the "orders" of Bentham and Hooker, being in fact in many cases nearly synomymous with the "cohorts" of the authors last named.

The place assigned the Slime-molds (Myxomycetes) indicates the acceptance of what we have for many years considered to be the true interpretation of their structure and relationship. In like manner the treatment of the Gymnosperms indicates a more philosophical spirit and a practical recognition of the doctrine of evolution.

THE STUDY OF THE LIVERWORTS IN NORTH AMERICA.—As one of the results of the one-sidedness of the usual teaching of botany in this country, whereby it is almost entirely restricted to the flowering plants and "vascular cryptogams," we find a most unequal distribution of workers throughout the various botanical fields. We have any quantity of "phanerogamists," but though the cryptogamic fields bear a plenteous harvest, the laborers are few, and year by year as the scattered workers are cut off by death, there are few among the younger ones to take their places. There must be something faulty in the instruction given by our botanical teachers in the many colleges and universities in this country. The results would indicate that in too many cases the kingdom of plants is supposed to come to an end just a little way beyond the boundary of the phanerogams.

These thoughts are suggested by a little book recently brought out by Dr. L. M. Underwood, under the modest title of a Descriptive Catalogue of the North American Hepaticæ North of Mexico. In a prefatory note the author says, "The study of hepaticæ is attended with much difficulty for several reasons, among which may be named the following:

1. These plants are very largely neglected by collectors.
2. The literature on the subject is rare and inaccessible.
3. Most of our public and college libraries contain little or no literature upon this subject.
4. Many of the species described as new by American writers are not represented in any American collection.

It is to be hoped that the purpose of the book as stated by the author "to relieve in part these difficulties, and to stimulate a more complete collection of Hepaticæ" may be realized.

Turning to the body of the book we find a few pages devoted to the general characters of the liverworts, time of collecting, geographical distribution, essential characters, bibliography, etc., the remainder of the book being filled with the descriptive catalogue.

As to the time for collecting, the author says: "The hepatics should be collected for preservation and study when in fruit, if this be possible, and this condition occurs at different seasons in the various species; some bear fruit in late autumn, some in early spring, some in midsummer; in short, there is scarcely any season of the year, even winter, that will not find some form in fruit, yet the period from October to May may include the larger number of species for the cool temperate regions of America. Many species have never been found in fruit, and possibly never produce fruit, so it will be advisable to collect all species whether in fruit or not, for otherwise these less known forms may be neglected."

Comparing the systematic portion of this work with that of Sullivant, which was published in Gray's Manual, twenty-five years ago or thereabouts, we find a very considerable increase in the number of genera and species.

Orders of Hepaticæ.	*Genera.*		*Species.*	
	Sullivant.	Underwood.	Sullivant.	Underwood.
Ricciaceæ....................	2	3	8	24
Marchantiaceæ..............	8	13	12	22
Anthocerotaceæ..............	2	2	6	14
Jungermanniaceæ............	26	32	82	169

An effort has been made to help the beginning by a judicious introduction of keys and synoptic characters, which from a personal trial we can assure the reader is fairly successful. The book ought to stimulate our younger botanists to take up the study of these plants, and we trust that the request of the author that collectors communicate specimens of the forms found in their localities may be abundantly rewarded.—*Charles E. Bessey.*

BOTANY AT SALEM.—The following extract from Professor Robinson's annual report of the work of the Peabody Academy of Science (the old home of the NATURALIST) shows a commendable activity in its botanical department during the year 1884:

"In the department of botany a great improvement has been made. As various collections were from time to time arranged they have been placed in boxes in the dark spare-room on the lower floor of the museum. This year a suitable herbarium case of white wood, containing ninety-six compartments, has been placed in the lecture-room, in which all the Essex county collections and the general reference collection from North America have been arranged. Other collections have also been placed in the lecture-room, so that now the herbarium is in a dry and pleasant room where it can be easily referred to by those in charge of it and by students who desire to consult it.

"The academy now owns a very good collection of botanical reference books, and two microscopes, which, under proper restrictions, are placed at the disposal of any persons desiring to compare species at the museum. The herbarium is by far the best in the county; it is centrally and conveniently situated, and has been frequently consulted through the year by students in this department of study. The special work on this collection has been the arrangement of the Algæ, of which there were a large number of specimens."

Botanical News.—For some time occasional papers have appeared in the *Amer. Mo. Micr. Jour.*, attempting to throw doubts upon the prevailing views as to the mode of fertilization in flowering plants. Microscopical preparations by Mr. J. Kruttschnitt, have been sent out for examination, with the intention of proving the new view. The editor of the *Botanical Gazette* in the January number devotes about a page to an indignant denunciation of the whole matter. In the January Jour. N. Y. Micr. Society, Dr. N. L. Britton devotes ten pages to criticisms of Mr. Kruttschnitt's papers and preparations. He closes by saying, "The fact of failure on the part of one, or indeed, of several persons, to discover a pollen tube in contact with the embryo-sac of an ovule, can, it seems to me, have no weight when viewed in connection with the fact that so many able investigators have often and undeniably seen such contact." The friends of this wild theory need no longer complain of its being ignored by botanists!——A. H. Curtiss, of Jacksonville, Florida, has prepared two series of wood specimens, including seventy-five species in each. Each specimen shows heartwood, sapwood and bark, and is accompanied by a printed label. The low price at which they are sold ($15 per single single series, or $25 for the two) ought to place them in many a botanical cabinet.——An important pamphlet On the establishment of a Botanical Garden and Arboretum in Montreal, has been issued recently by the Montreal Horticultural Society. It gives some valuable statistics as to the botanic gardens of the world, and sets forth their scientific and practical value. It is mainly from the pen of Professor Penhallow.——One of the most valuable catalogues issued by the exhibitors at the New Orleans Exposition is that enumerating the articles forwarded from the Island of Jamaica, the work of Mr. D. Morris. It is particularly interesting as containing classified lists of plants and plant products.——The collection of Florida woods in the exposition is one of the finest on exhibition. It was prepared, we are assured, by A. H. Curtiss, of Jacksonville.——The collection of California plants shown by J. G. Lemmon in the exposition, contains nearly a full set of the ferns of the Pacific coast.——One of the absurdities to be seen in the exposition is a large well painted sign over a section of a big tree *(Sequoia gigantea)* which gravely informs the seeker after wonderful things that these trees attain the age of 3700 years!——Strasburger's Kleine Botanische Practicum has just been received. It is to our mind a much more useful and usable book than the large one. It should be translated and republished at once in this country for the benefit of American students.——The thirty-fifth and thirty-sixth reports

PLATE XVIII.

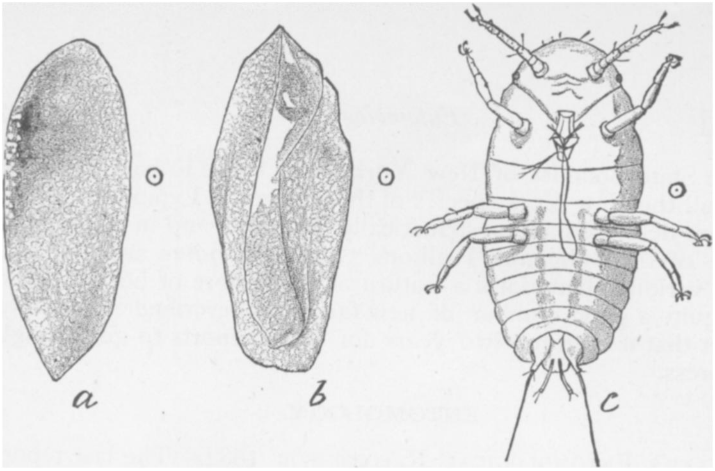


Fig. 1.

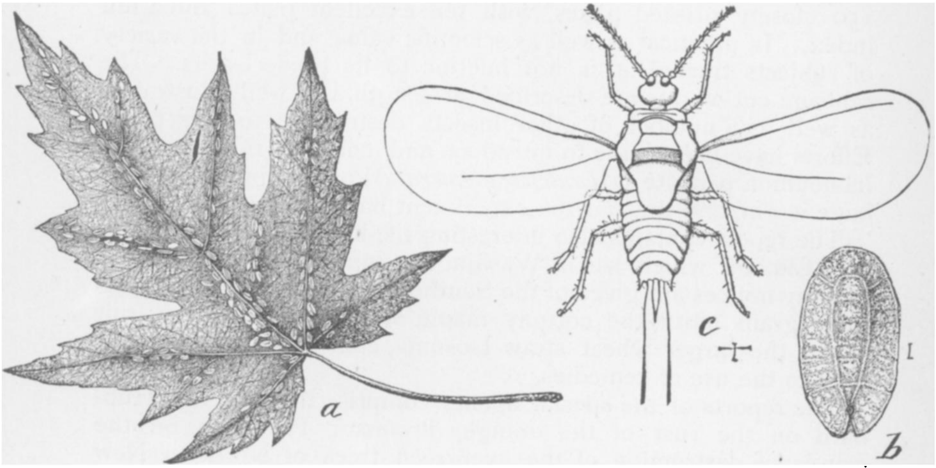


Fig. 2.

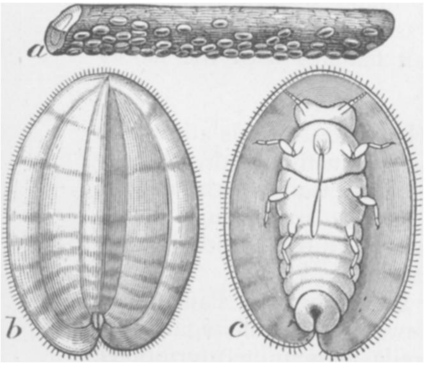
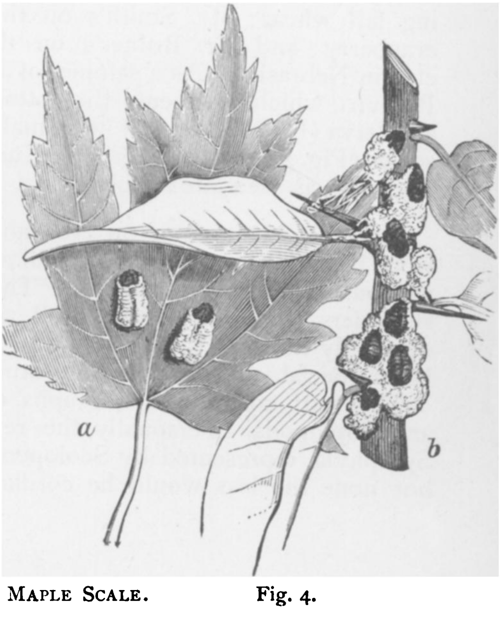


Fig. 3.



THE COTTONY MAPLE SCALE. Fig. 4.

of the State Botanist of New York have come to hand. In the first, all the New York species of the sub-genus Lepiota of Agaricus, are described and systematically arranged, and in the second those of the subgenus Psalliota. Valuable notes and remarks upon various plants form a feature as heretofore of both reports, and quite a good number of new fungi are described. We only regret that it requires two years for these reports to go through the press.

ENTOMOLOGY.

Riley's Entomological Report for 1884.—The last report of the entomologist of the Department of Agriculture fills about 150 closely printed pages, with ten excellent plates and a full index. In practical as well as scientific value and in the variety of subjects treated, it is not inferior to its predecessors. The cabbage cut-worms are described at length and well illustrated, as well as a number of other insects destructive to this plant. Efforts have been made to introduce and colonize the European ichneumon parasite (*Apanteles glomeratus*) of the imported cabbage worm, and thus far the experiment has been successful.

The report contains also interesting life-histories of the American Cimbex, which has in Washington injured the willow, and lengthy notices are given of the Southern buffalo gnat, the angoumois grain moth, the cottony maple scale, the cranberry fruit worm, the larger wheat straw Isosoma, etc. Much attention is paid to the use of remedies.

The reports of the special agents comprise those of Mr. Hubbard on the rust of the orange, Professor Packard's on the causes of destruction of the evergreen trees of Northern New England and New York; Mr. Webster's on the insects affecting fall wheat; Mr. Smith's on those affecting the hop and cranberry; and Mr. Bruner's on the Rocky mountain locust, etc., in Nebraska. As a sample of the excellent illustrations is Pl. XVIII, which represents the cottony maple scale, with its eggs and larva (Fig. 1), the leaf with male scales (Fig. 2), the female scales (Fig. 3), and in Fig. 4 the adult females with the wooly egg-mass as seen late in the spring.

Latzel's Myriopoda of Austro-Hungaria.—This admirable work bears all the marks of faithful and exhaustive labor, whether we consider the text or plates. The descriptions of the orders, suborders, families, genera as well as species are given in detail, especially those of the orders and genera, and the work will thus be of special value to American students.

This part contains monographs of the Symphyla, Pauropoda. and Diplopoda. Personally the reviewer does not regard the Symphyla, represented by Scolopendrella, as genuine myriopods, but none the less would he cordially welcome the work which